Evaluation and Assessment at NSF

PAMELA O'NEIL
OFFICE OF INTEGRATIVE ACTIVITIES
OFFICE OF THE DIRECTOR
APRIL 11, 2012

Institutional Issues: Long-Term, High-Level

- Establishing a culture and commitment in NSF and in the NSF-funded science and education communities committed to the importance of determining impact of NSF investments in science and education;
- Determining NSF's future approach to fostering and engaging in evaluation activities so that data-driven improvements underpin NSF's program management decisions and planning in science and education;
- Building coherent approaches and mechanisms for data gathering and monitoring systems that enable the agency to address fundamental questions about the impact of research, education, and human capital investment; and
- Ensuring NSF's own investments in data, evaluation, and assessment are advancing the frontiers of science in those areas as appropriate.

Evaluation and Assessment Overview:

Proposal	Project	Program	Foundation	Science
Ad hoc Review	Annual Reports	Monitoring	Committees of Visitors	Star Metrics
Panel Review	Site visits	Formative evaluation	Performance Priority Goals	
Site visits	Final Reports	Formal impact evaluation	Merit Review Report	
Director's Review Board	External formative or summative evaluation			
National Science Board				

AC/GPA COV subcommittee

2009 Report

"…Build assessment into the organizational and programmatic infrastructure of NSF".

Process evaluations – COVs
Advisory Committees
Performance requirements
External reviews by AAAS or NAS
External formal program evaluations by contractors
Internal studies to inform data-driven decision making
New processes for outcomes assessment

What limits the success of all of these assessment activities is the articulation of goals that are aligned with activities and our ability to use our own data.

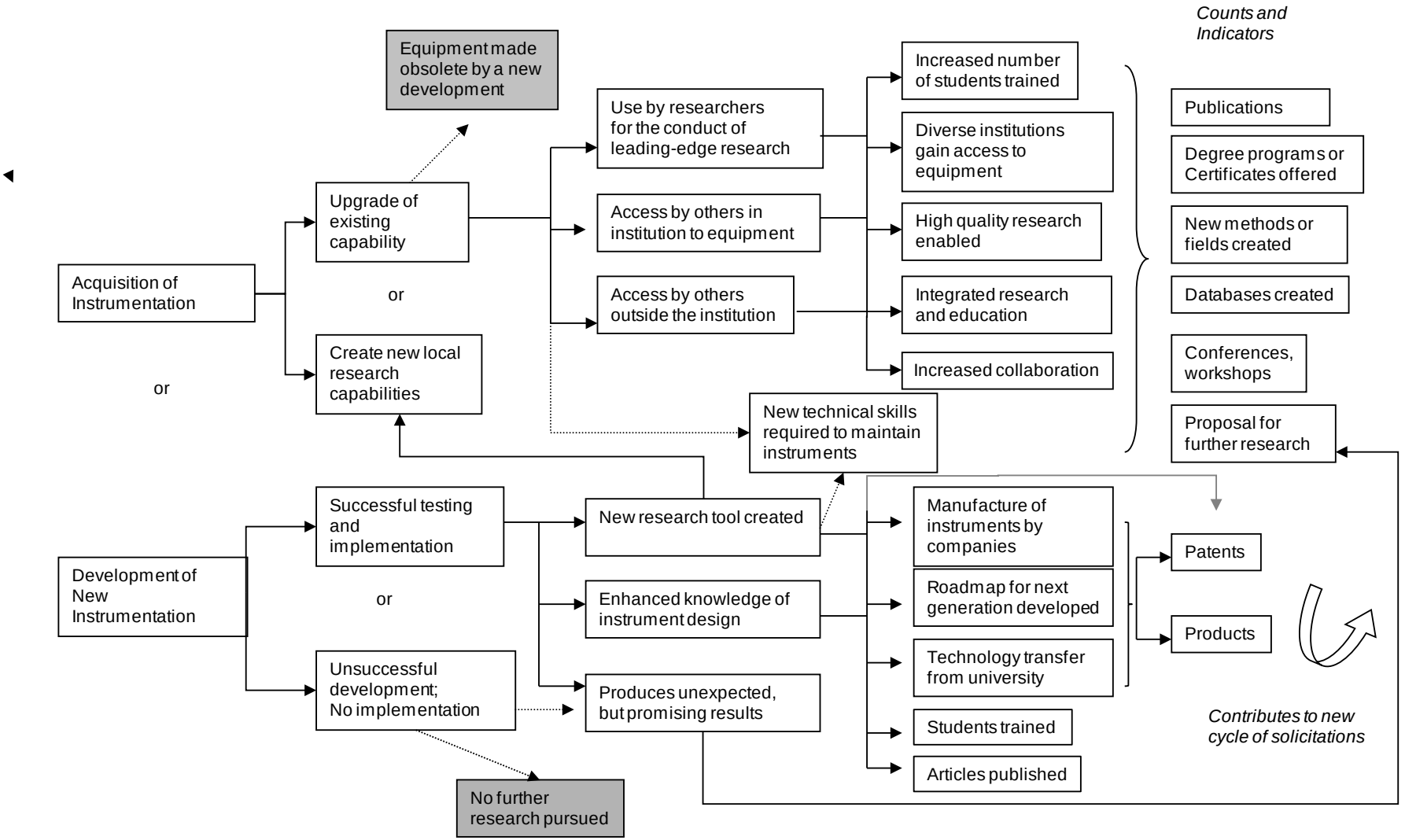
Articulating goals:

Encourage the integration of goal statements into routine practices such as:

- the development of solicitations and management plans,
- planning documents for fundamental science programs,
- roadmaps for cross-cutting programs,
- NSF budget Proposals, or
- COV materials describing program portfolios.

Many Programs are now including logic models in these materials.

NSF MRI Program Logic Map



NSF-wide Coordination of Evaluations:

- Identify or help improve major program evaluations.
- Coordinate or assist with NSF-wide evaluations (INSPIRE, SEES, Broader Impacts, Graduate Program).
- Identify opportunities for thematic evaluations of clusters of programs that would allow comparisons.
- Develop a policy or guidelines about when and how the results of external evaluations are reviewed, cleared, and released.

Objective: NSF will have well coordinated analytical tool development and program-specific data collection efforts that follow from agreed-upon questions.

- Share best practices about analytic tools that are currently available or in development. “Data Group”
- Expertise in tool development
- On-going needs assessments with STPI
- Collect program level output and outcome data that is comparable across programs
- Collect output and outcome data associated with our investments related to the Broader Impacts review criterion

Program Evaluation

is the systematic collection of information about the activities, characteristics, and outcomes of programs to make judgments about the program, improve program effectiveness, and/or inform decisions about future programming.

Patton, 2011

There are significant challenges to measuring outputs, outcomes, and impact.

- PIs are only required to report outcomes during the grant period.
- Many outputs and outcomes occur after the award is complete.
- To measure impact requires comparison with a counterfactual.
- It is difficult to measure the success or failure of unfunded proposals.
- The most successful scientists will find funding from NSF or another source.

Framework for Program Evaluation

Evaluation should serve a specific purpose and be conducted at decision-making junctures.

Factors to Consider:

- Size and budget
- Stability
- How much is know already
- Baseline at project inception
- Whether the program was previously evaluated

Stages of Program Evaluation

Evaluation Activities:	Purpose:
1. Literature reviews	1. Lay of the land
2. Qualitative testing	2. Preparatory for quantitative
3. Program monitoring	3. Understanding uniformity or diversity across participants
4. Process evaluations	4. Understanding in more depth than can be learned from monitoring
5. Formative evaluations	5. Whether program shows promising outcomes
6. Formal experimental or quasi-experimental	6. To measure impact of NSF Program

A “continuum” of program evaluation processes:

(1) Set up baseline information about workforce development assumptions and needs in program area,

(2) Develop clear current program goals and program theory of action ***(Logic Models),***

(3) Finalize meaningful and useful program measurement outcomes,

(4) Put into place an appropriate program performance management system,

(5) Accumulate sufficient data and information from the performance management system, and

(6) Use evidence and data to implement target program improvements.

Objective: Expertise in Planning and Evaluation to Serve all of NSF.

- Expertise in planning, goal setting and logic modeling to help us draft roadmaps, design high quality evaluations,
- In-house expertise to critique the evaluation designs proposed by contractors and SOWs to improve the evaluation products that come from these contracts

Thank you.